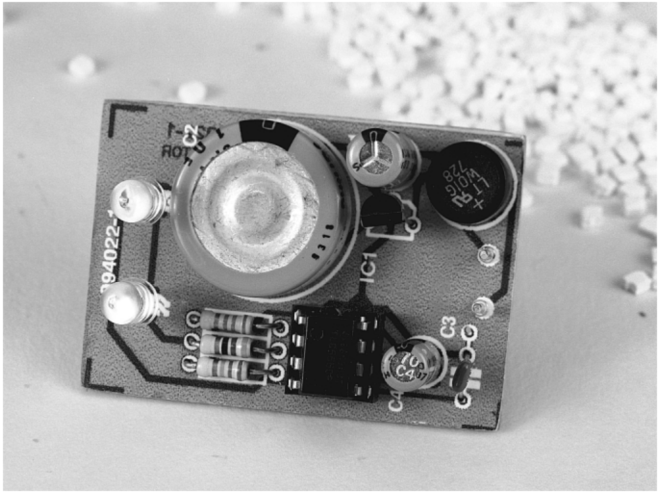
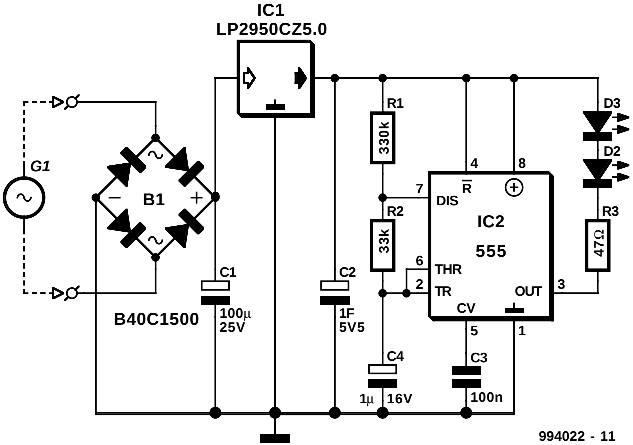
bicycle rear-light afterglow

006





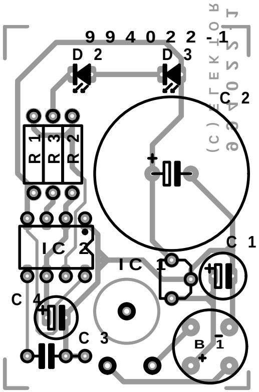
(For bicycles with a dynamo)

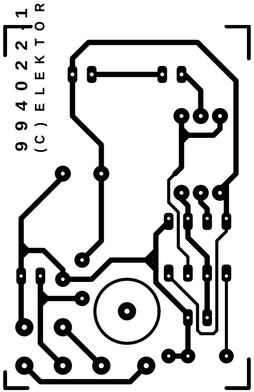
Stefan Knorr

This article is of interest only to readers whose bicycle lights are powered by a dynamo. The laws on bicycle lights in the United Kingdom are stricter than in most other countries and a dynamo is, therefore, a rarity in the UK.

For safety's sake, it is obligatory for cyclists in the UK to have the rear light of their bicycles on even when they are at standstill. Such a rule is, of course, also advisable in other countries, even when it is not mandatory.

In contrast to a similar article in the July/August 1998 issue of this magazine, the super-luminous LEDs are not powered directly by the regulator, IC_1, but via a timer, IC_2. The timer is driven by a pulsating voltage with a duty factor of 10%. This ensures very





Parts list

Resistors:
R_1 = 330 kΩ
R_2 = 33 kΩ
R_3 = 47 Ω

Capacitors:
C_1 = 100 µF, 25 V, radial
C_2 = 1 F, 5.5 V, Goldcap
C_3 = 0.1 µF, ceramic

Semiconductors:
B_1 = rectifier B40C1500, round
D_2, D_3 = high luminosity LED

Integrated circuits:
IC_1 = LP2950CZ5.0
IC_2 = TLC555CP

Miscellaneous:
PCB Order No. 994022 (see Readers Services towards the end of this issue)

low current drain and also that the reservoir capacitor, C_2, can energize the LEDs for a long time.

Capacitor C_2 is charged when the bicycle, and thus the dynamo if this makes contact with the relevant wheel, is ridden. This happens via bridge rectifier B_1, and low-drop regulator IC_1. The output of the regulator is a steady +5 V.

When the bicycle is in use, but at standstill, for instance, at traffic lights, the potential across C_2 powers astable multivibrator (AMV) IC_2. With component values as specified, the switch-on time is about 0.02 s, but the LEDs are not energized until 0.25 s have elapsed.

The circuit is best built on the printed-circuit board, which is available through our Readers' Services (see towards the end of this issue) under Order. no. 994022.

[994022]